Testing Methodology and Approval of Food Storage Containers for Use in Yosemite National Park, Sequoia and Kings Canyon National Parks, Inyo National Forest, and Stanislaus National Forest

Sierra Interagency Black Bear Group
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I. Introduction

Every year, incidents between humans and black bear in the Sierra Nevada lead to thousands of dollars in property damage, human injuries, and destruction of bears. Access to human food, either through improper or inadequate storage, is the most significant cause of these problems. Numerous methods exist for storing food, but because black bears are persistent, intelligent, and agile, many of these methods fail. To ensure that only reliable bear-resistant food storage methods are used in Yosemite National Park (YOSE), Sequoia and Kings Canyon National Parks (SEKI), and Inyo National Forest (INYO), all three areas have specified what methods are approved for use within either their NPS Compendium Regulations or USFS Forest Orders. The legal authority for food storage regulations fall under CFR 251.50 (a) and (b) for the USDA Forest Service (USFS), and 36 CFR 2.10 (d) for the National Park Service (NPS). In Stanislaus National Forest (STF), the use of approved bear-resistant products is strongly encouraged.

In front country areas, the use of bear-resistant food storage lockers is generally required. In the backcountry, food storage regulations vary, but bear resistant canisters and panniers are always the preferred option, and in some places, required. Because each type of canister and pannier is made differently, only those proven to be bear resistant and compatible with resource protection and public safety are approved for use in SIBBG areas. In the past, YOSE, SEKI, and INYO used different standards, if any, for approving canisters and panniers, which led to confusion and inconsistency. To streamline agency standards and improve the approval process, YOSE, SEKI, INYO, and STF have joined to form the Sierra Interagency Black Bear Group (SIBBG), and under this umbrella group, have agreed on the process designated below. The SIBBG is further working to coordinate with the Interagency Grizzly Bear Group (IGBC) on standards for canisters and panniers.

Therefore, in YOSE, SEKI, and INYO, where canisters are required, only "SIBBG ***approved*** bear-resistant food storage containers are permitted". In STF, SIBBG approved bear-resistant food storage containers are highly recommended. In legal documents within these three areas, SIBBG may be replaced with YOSE, SEKI, or INYO.

This document provides a clear process to achieve this legal provision through:

1. Adoption of a process to evaluate and test new and existing products to satisfy the requirement of "SIBBG approved" bear-resistant food storage containers and to share the results with SIBBG members and the public.

2. Provision of a means to issue conditional acceptance certificates so that approved containers may be legally used in YOSE, SEKI, and INYO.

II. General Provisions

- The SIBBG will consider hard-sided bear-resistant products designed for commercial sale or rental in YOSE, SEKI, and INYO. Containers created solely for personal use will not be considered or approved.
- The SIBBG may test a soft-sided container if it shows a reasonable potential for success. In such cases, a specialized test will be conducted.
- The SIBBG will only test final products and not products under development.
- This testing protocol will be followed by all members of SIBBG.

III. Submission

Interested manufacturers or product developers must first contact a unit representative from SIBBG to have a container tested for approval by the SIBBG. Current contacts are provided in section VII of this document. For products that are already approved by the IGBC, please see section VI, on IGBC-approved containers.

A representative from the SIBBG will be assigned as the contact person for each product submitted to facilitate the approval process. Each manufacturer must also appoint one agent to serve as their contact person for each product submitted.

Submissions will be accepted on an ongoing basis for SIBBG approval. Within a month of submission, the SIBBG contact person will distribute pictures and a written summary of the submitted products to all members of the SIBBG group for review. If the container passes visual inspection, structural testing will begin as soon as possible by the SIBBG, subject to funding and workload constraints. The SIBBG recommends that manufacturers notify the group of pending submissions, so that the SIBBG may expedite the testing process. Our goal is that, within six months of receipt of a submission, all testing will be completed.

Manufacturers will submit a minimum of two containers (one pannier) for testing. All must be labeled with the following information: the manufacturer's name, the product name and model number (each version of a product must have a unique model number), a telephone number, mailing address, and e-mail address. A brief history of the product's developments shall also be submitted, including: the results of structural testing, description of past models (if applicable), any changes that have been made to correct past problems or failures, and the container's weight and dimensions. All containers must be clearly identifiable as different from earlier, unsuccessful models. Containers will not be returned to the manufacturer. If a container is approved, all containers must be labeled with a batch number.

If manufacturers make any changes improvements to a product that has previously been tested and approved by the SIBBG, the SIBBG may, at its discretion, reissue an approval letter without additional testing. For example, if a manufacturer has two sizes of a container that are both approved, the manufacturer may request that the SIBBG also approve sizes that are intermediate in all dimensions between the two approved ones. For containers that do not require any remolding, and where the intermediate sizes are subject to the same materials and specifications as the approved sizes, the SIBBG may grant the additional approvals without additional testing.

If manufacturers make sub-standard or no improvements to a product that has previously been tested and/or failed in SIBBG or non-SIBBG areas, SIBBG may, at its own discretion, deny the manufacturer additional testing.

IV. Testing

The SIBBG will grant conditional approval of hard-sided containers designed to be "bear-resistant" upon the successful completion of three tests: visual inspection, structural testing*, and animal testing. A "conditionally approved" container may be used by the public while it receives its fourth and final test, the "field evaluation". The container must be successful in the fourth test to be fully "approved". Containers with unusual designs or materials may require additional tests to evaluate the container's strength or sustained ability to retain contents and keep them in an edible condition.

**Note: Structural testing conducted by an engineering testing service prior to submission for SIBBG approval is strongly recommended although not currently required. The SIBBG advocates application of 150 foot-pounds of energy to measure impact resistance. Application should be applied in the same manner as outlined in the SIBBG Structural Testing Protocol.*

Test One: Visual Inspection

The SIBBG group, consisting of representatives from all four agencies, will make a visual inspection of the container. A container passes the visual inspection test if the container:

- Appears likely to withstand structural testing or animal testing, i.e., there are no gaps >3/16" wide, the lid is recessed, and the container is not made of materials that bears are known to be able to break (including wood and PVC plastic).
- Does not pose a threat of injury to bears, other wildlife, or humans. For example, the latches must be flush with the container.
- Does not serve as a "delay tactic" (i.e. a device designed to work in the short-term while the user scares the bear away), but rather as a long-term storage unit.
- Does not appear to be excessively complicated or difficult for users to operate.
- Has strong and long-lived construction components, and material that will structurally endure elements of weather or the backcountry environment.
- Is consistent with wilderness ethics and will not result in damage to the natural environment.

A container fails the visual inspection if any one of the problems listed above is identified.

Test Two: Structural Testing

Containers that pass the visual inspection are then put through structural testing. The structural test is conducted using both an approved "impact-testing" machine and, when available, a penetrometer. Both tests were developed by the Missoula Technology Development Group (MTDC).

Structural testing begins with a simple "drop test". A container is dropped from three feet at a 45 degree angle onto bare concrete or granite. If the container remains intact, it is impact tested.

During the impact test, 150* foot-pounds of energy (a 150-pound cartridge dropped from one foot) are dropped on the container. This is done two times: one time on the side and one time one the lid (or at the two weakest points) with the container propped up on a sandbag. For containers greater than 18" X 12", 200-foot pounds are used.

The penetrometer test is then conducted. The penetrometer is 1/8" with a rounded tip that tapers up to 3/8". It replicates the indentation of a bear's teeth. It is lowered down to the container with 125 pounds of energy.

A container passes the structural tests if the container does not have any cracks, openings, or hinges that would allow a bear to gain entry by biting or pulling with its claws. The standard is: there must be no access points greater than 3/16" wide.

** Note: The SIBBG set this standard, in conjunction with the IGBC, based on a combination of zoo and field tests. A canister that can withstand 150 foot-pounds of energy will also withstand the weight of a black bear pushing on the canister. Larger containers (panniers) are tested at 200 foot-pounds due to the greater chance of bending with an increased surface area. In some grizzly bear areas, containers less than 18" X 12" (canisters) must also withstand 200 foot-pounds of energy.*

Test Three: Animal Testing

If the container passes the visual inspection AND the structural testing, a field trial will be conducted using captive black bear(s) at a California zoo. This test, the animal test, will proceed as follows:

An approved zookeeper will fill one or more containers with odorous foods, weighted to approximate actual use conditions, and then dab the container with a strong food attractant on and around entry points and other seams. If possible, the preparation will be witnessed and photographed by either a SIBBG representative, the manufacturer, or the zookeeper.

The container(s) will then be presented to one or more bears by the zookeeper. The zookeeper will ensure that the bears have had their daily meals withheld on the day of each test.

The test begins as the bear(s) attempt to open the container. Bears generally work the lid, compress the sides, and wedge the canister between rocks. They may duck it under water, or even toss it. For the test to be considered valid, the bear(s) must spend a minimum of 30 minutes (cumulatively), during which they are actively attempting to get into the container(s). This may include one or more of the following; biting and clawing at the container; rolling, dropping, and shoving; or other rough play with the container. However, the test is not considered complete until the zookeeper removes the container from the pen. In other words, bears must be able to actively manipulate the containers for a minimum of 30 minutes, and the test doesn't end until the container is removed from the bear holding pens for assessment.

The container passes the animal test if, after the above manipulations, there are no access points greater than 3/16" wide, the container remains functional, and its contents are not accessed.

All animal tests are subject to the following provisions:

- A zookeeper and a SIBBG representative will be present to monitor all zoo tests, film results, and judge whether the container is given a fair, adequate, and rigorous trial. In certain situations, with prior approval by the SIBBG, test may be conducted without SIBBG members present, if at an approved zoo, and with an approved zookeeper present. The entire test must be filmed. Prior to any zoo test, the manufacturer must sign any clearances required by the zoo and must agree to take on any related costs and liability.
- Bears used in the tests must demonstrate an "interest" in participating in the test, be hungry, and exert effort in attempting to open a container. Since bears have "off" days just as humans do, the SIBBG and the zoos reserve the right to discontinue and reschedule tests at their discretion.
- Containers cannot be retrieved at any time once they are presented to a bear, especially once a weak point is found or created in a container.
- The zoo test will be arranged by the SIBBG contact person.

Test Four: Field Evaluation

If the container passes the visual inspection, the structural test, and the zoo trial, manufacturers will be granted conditional approval, which allows that container to be legally used, as intended, in the INYO/SEKI/YOSE administrative areas and elsewhere. During the first season of conditionally approved use, two containers supplied by the manufacturer, will undergo an in-house field evaluation concurrent to three months of visitor use. Participating agencies will use one or more of the containers during a three-month period. Testers will record, in writing, the ease of container use, durability of the container under field conditions, and the level of security from bears. Note that the field evaluation may be discontinued, and the conditional approval pulled, at any time due to failures. In addition to structural failures, if visitors habitually abandon a type of container, or its contents, in the backcountry, the container will fail. Potential reasons for abandonment include mutilated food, or containers that are carried away by bears. If a "conditionally approved" container does not have a pattern of failures during this three-month evaluation, the container's status will be upgraded to "approved".

V. Results

Upon completion of each test described above, the SIBBG representative assigned to the canister will contact the manufacturer to discuss results.

Results of tests, film, and agency concerns cannot be legally withheld from the public. Testing conducted on zoo grounds is public domain and may be viewed by members of the public and the media if interest exists. However, patent or design information will not be disclosed outside of the SIBBG forum during the approval process.

A conditional letter of SIBBG approval will be issued only for the model tested. *Any changes or modifications to approved models must be resubmitted to the SIBBG for consideration*.

"Conditional approval" will be upgraded to "approval" if the field evaluation is successful. If, at any point during the field evaluation, the container is unsuccessful, conditional approval will be rescinded, regardless as to whether the three months have elapsed. Any SIBBG approval may be rescinded at any time due to successive product failures.

Containers will not be allowed for use, sale, or rent in YOSE/SEKI/INYO without a conditional approval or an approval letter on file in each of these administrative areas.

Conditional letters of acceptance do not guarantee that a product will be sold or rented at a particular national park or national forest.

Concerns may be stated in the acceptance letter if SIBBG has concerns about user reliability, durability, or resource impacts that may result from use of the product in national parks and national forests in the southern Sierra. These concerns may be shared with the public.

Revocation of a product's approval may occur at any time based upon the SIBBG consensus. This may include evidence that bears have mastered the container/device, use of the container is resulting in environmental damage, the container is being commonly misused, or weather and/or exposure are causing structural failure.

When an individual SIBBG approved bear-resistant food storage container is no longer able to pass the above tests due to breakage or wear-and-tear, that particular container may no longer be legally used in YOSE, SEKI, or INYO. The SIBBG takes no responsibility for these defunct containers that were approved when new.

This approval process will be reviewed and updated on an annual basis.

VI. IGBC-Approved Containers

Containers that have Interagency Grizzly Bear Committee (IGBC) approval are not automatically approved by the SIBBG, but will go through a shortened version of the SIBBG testing and approval process, as follows:

Visual Test: This test will be conducted by SIBBG members in consultation with members of the IGBC. The main difference between SIBBG and IGBC requirements is that the SIBBG requires that containers do not pose a risk of injury to the bears, or impacts to the natural and cultural resources.

Structural Test: The SIBBG will accept the IGBC's findings on structural testing.

Animal Test: The SIBBG will accept the IGBC's finding on animal testing if the tests were conducted using black bears. If they were conducted on grizzly bears, a test using black bears will be required because black bears and grizzly bears show considerable differences as to the types of containers they can open.

Field Evaluation: The SIBBG will require a three-month period of field evaluation before a container is fully approved.

If a manufacturer wants a container to be tested by both the SIBBG and the IGBC concurrently, containers should be sent to both SEKI and IGBC with a cover letter of explanation so the two groups can coordinate testing.

VII. Contact Information

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